REMARKS

In response to the Office Action mailed July 3, 2002, Applicants have amended claims 1, 9, 10, 20 and 41, and cancelled claims 2, 3, 21, 22, 42 and 43. Claims 1, 4-14, 16-20, 23-33, 35-41 and 44-58 are presented for examination. The amendments are supported by the application as originally filed (e.g., page 4, lines 5-12; page 8, lines 7-10; and page 41, lines 10-11) and do not add new matter.

The Examiner rejected claims 1-14 and 16-19 under 35 U.S.C. §103(a) as being unpatentable over Koster, Tanaka or Fritzemeier in combination with Nakamura or Saitoh.

Claims 2 and 3 have been cancelled, and so the rejection on this ground should be withdrawn.

As amended, claims 1, 4-14 and 16-19 cover methods that include chemically conditioning the surface of a deposited buffer layer to form a conditioned surface having substantially the same crystallinity as the deposited layer but a different morphology from the deposited layer.

Koster discloses methods that involve treating single crystal substrates. (See, e.g., Koster at 209). As known to those skilled in the art, such single crystal substrates are not *deposited* layers. Therefore, Koster does not disclose treating the surface of a *deposited* layer, as required by claims 1, 4-14 and 16-19. Moreover, Koster is concerned with getting rid of alternating layers of material (SrO and TiO_2) caused by a miscut angle in his single crystal. (Id.). In other words, Koster's method is deliberately designed to change the crystallinity of the surface of his substrates, as opposed to keeping the crystallinity of the surface substantially the same, as required by claims 1, 4-14 and 16-19. Accordingly, Koster does not disclose or suggest the methods covered by these claims. Instead, Koster teaches away from such methods.

Similar to Koster, Tanaka discloses methods of treating single crystal substrates, rather than methods of treating the surface of a *deposited* layer. (See, e.g., Tanaka at L731). In particular, Tanaka is concerned with removing a "damaged layer" from the surface of his single crystal substrates, and so Tanaka's method is deliberately designed to change the crystallinity of the surface (e.g., from amorphous to crystalline). (Id.). Therefore, Tanaka neither discloses nor

suggests: 1.) a method of treating a *deposited* layer; and 2.) a method in which the crystallinity of a surface is substantially unchanged, but the morphology of the surface changes, as required by claims 1-14 and 16-19. Rather, like Koster, Tanaka teaches away from the methods covered by these claims.

Fritzemeier discloses treating the surface of a metal or alloy substrate. (See, e.g., Fritzemeier col. 2, lines 49-55 and col. 4, lines 18-28). But, Fritzemeier's substrates are formed, for example, of rolled and annealed metal or alloy materials, or single crystal materials, as opposed to being *deposited* layers. (Id. col. 12, lines 13-16). Fritzemeier does not disclose treating the surface of a *deposited* layer, as required by claims 1, 4-14 and 16-19. Moreover, Fritzemeier's treatment is designed to remove contaminants from the surface of the substrate. (Id. col. 2, lines 48-55). As known to those skilled in the art, this is very different from treating a surface to change the orientation of the surface. Indeed, Fritzemeier's process is designed to grow a deposited layer, as opposed to treating a deposited layer. (Id. col. 7, line 48-col. 8, line 11). Hence, Fritzemeier neither discloses nor suggests the methods covered by claims 1, 4-14 and 16-19.

In summary, for the foregoing reasons, each of the primary references cited by the Examiner (Koster, Tanaka and Fritzemeier) fails to disclose, or even suggest, the methods covered by claims 1, 4-14 and 16-19.

Nakamura discloses methods designed to remove contaminants from the surface of an oxide superconductor. (See, e.g., Nakamura col. 3, lines 40-60). However, Nakamura selects his conditions to avoid changing the morphology of the oxide superconductor surface. (Id. col. 4, lines 3-8). In other words, Nakamura's method is specifically designed to avoid changing the morphology of his surface. Accordingly, Nakamura does not disclose or suggest a method that involves conditioning the surface of a deposited layer to form a conditioned surface having a different morphology from the deposited layer, as required by claims 1, 4-14 and 16-19. Rather, Nakamura teaches away from such methods.

Saitoh discloses a method designed to "improve" the crystallinity of the surface of an oxide superconductor by exposing the surface to a laser beam. (Saitoh col. 2, lines 43-50). In other words, Saitoh's method is designed to change the crystallinity of the surface. Accordingly,

Saitoh does not disclose, or suggest, the methods covered by claims 1, 4-14 and 16-19. Instead, Saitoh teaches away from these methods.

None of the references cited by the Examiner, alone or in combination, discloses or suggests the methods covered by claims 1, 4-14 and 16-19. Moreover, for the reasons noted above, there is no suggestion to combine these references to provide such methods. Furthermore, even if the references were combined in the manner suggested by the Examiner, the result would not be the methods covered by claims 1, 4-14 and 16-19. Instead, the result would be a method that did not include chemically conditioning the surface of a deposited layer to form a conditioned surface having substantially the same crystallinity as the deposited layer but a different morphology from the deposited layer.

In view of the foregoing, Applicants request reconsideration and withdrawal of the rejection of claims 1-14 and 16-19 under 35 U.S.C. §103(a).

The Examiner rejected claims 20-33 and 35-58 under 35 U.S.C. §103(a) as being unpatentable over Konishi in combination with Nakamura.

Claims 21, 22, 42 and 43 have been cancelled, and so the rejection on this ground should be withdrawn.

As amended, claims 20, 23-33, 35-41 and 44-58 cover methods that include heating the surface of a deposited layer to form a conditioned surface having substantially the same crystallinity as the deposited layer but a different morphology from the deposited layer.

Konishi discloses heating a single crystal oxide in an environment containing oxygen. (See, e.g., Konishi col. 3, line 52-col. 4, line 17). Such single crystal substrates are not *deposited* layers, and so Konishi does not disclose treating the surface of a *deposited* layer, as required by claims 20, 23-33, 35-41 and 44-58. Moreover, Konishi is concerned with providing a method of heating an oxide superconductor without forming protrusions at the surface. (Id. col. 1, line 65-col. 3, line 23). Thus, his method is not designed to treat a surface to change its morphology. Rather, Konishi discloses a method that is designed to avoid forming a particular surface morphology (protrusions). Accordingly, Konishi does not disclose or suggest the subject matter covered by claims 20, 23-33, 35-41 and 44-58.

As explained above, Nakamura discloses methods that are designed to avoid changing the morphology of the surface his oxide superconductors, and so Nakamura does not disclose or

suggest the methods covered by claims 20, 23-33, 35-41 and 44-58. Rather, Nakamura teaches away from such methods.

Neither Konishi nor Nakamura, alone or in combination, discloses or suggests the methods covered by claims 20, 23-33, 35-41 and 44-58. Moreover, there is no suggestion to combine these references to provide such methods. Furthermore, even if the references were combined in the manner suggested by the Examiner, the result would not be the methods covered by claims 20, 23-33, 35-41 and 44-58. Instead, the result would be a method that did not include heating the surface of a deposited layer to form a conditioned surface having substantially the same crystallinity as the deposited layer but a different morphology from the deposited layer.

Accordingly, Applicants request reconsideration and withdrawal of the rejection of claims 20-33 and 35-58 under 35 U.S.C. §103(a).

Attached is a marked-up version of the changes being made by the current amendment.

Applicants believe the application is in condition for allowance, which action is requested. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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Version with markings to show changes made

In the claims:

Claims 2, 3, 21, 22, 42 and 43 were cancelled.

The claims were amended as follows.

--1. (Twice Amended) A method of making a multi-layer article, comprising:

depositing a first material on a surface of a third material to form a deposited layer of the first material, the first material being [selected from the group consisting of] a buffer material [and a superconductor material], the deposited layer of the first material having a surface with a crystallinity and a morphology;

chemically conditioning [a] the surface of the deposited layer of the first material to form a conditioned surface having a crystallinity and a morphology, the crystallinity of the conditioned surface being substantially the same as the crystallinity of the surface of the deposited layer, and the morphology of the conditioned surface being different from the morphology of the deposited layer; and

disposing a layer of a second material on the conditioned surface.

9. (Once Amended) The method of claim 1, further comprising disposing a layer of a [third] fourth material on a surface of the layer of the second material.

10. (Once Amended) The method of claim 9, further comprising, prior to disposing the layer of the [third] fourth material on the surface of the layer of the second material, conditioning the surface of the layer of the second material.

20. (Twice Amended) A method of making a multi-layer article, comprising:

depositing a first material on a surface of a third material to form a deposited layer of the first material, the first material being [selected from the group consisting of] a buffer material [and a superconductor material], the deposited layer of the first material having a surface with a crystallinity and a morphology;

heating, at an oxygen gas pressure of less than about 700 Torr, [a] the surface of the deposited layer of the first material to a temperature at least about 5°C above a temperature selected from the group consisting of a deposition temperature of the layer of the first material and a crystallization temperature of the layer of the first material to form a conditioned surface having a crystallinity and a morphology, the crystallinity of the conditioned surface being substantially the same as the crystallinity of the surface of the deposited layer, and the morphology of the conditioned surface being different from the morphology of the deposited layer; and

disposing a second material layer on the conditioned surface.

41. (Twice Amended) A method of making a multi-layer article, comprising:

depositing a first material on a surface of a third material to form a deposited layer of the first material, the first material being [selected from the group consisting of] a buffer material [and a superconductor material], the deposited layer of the first material having a surface with a crystallinity and a morphology;

heating [a] the surface of the deposited layer of the first material to a temperature at least about 5°C above a temperature selected from the group consisting of a deposition temperature of the layer of the first material and a crystallization temperature of the layer of the first material to form a conditioned surface having a crystallinity and a morphology, the crystallinity of the conditioned surface being substantially the same as the crystallinity of the surface of the deposited layer, and the morphology of the conditioned surface being different from the morphology of the deposited layer, the first material being disposed on a surface of a polycrystalline material; and

disposing a second material layer on the conditioned surface.--